# Restoring Dominant Native Species in the Mojave Desert


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Bechtel Nevada

DoD EPA DOE SERDP
Strategic Environmental Research and Development Program
Improving Mission Readiness Through Environmental Research

# Problem:  Training activities can have serious impacts on desert lands

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Wind erosion

# Problem: Training activities can have serious impacts on desert lands

Water erosion

Loss of Soil

# Role of ITAM:

- Evaluate impacts
- Identify where they occur
- Mitigate those impacts so soldiers have lands to train on

# Objective:

Improve germination and establishment of desert shrubs

Creosote bush
(*Larrea tridentata)*
*LATR*

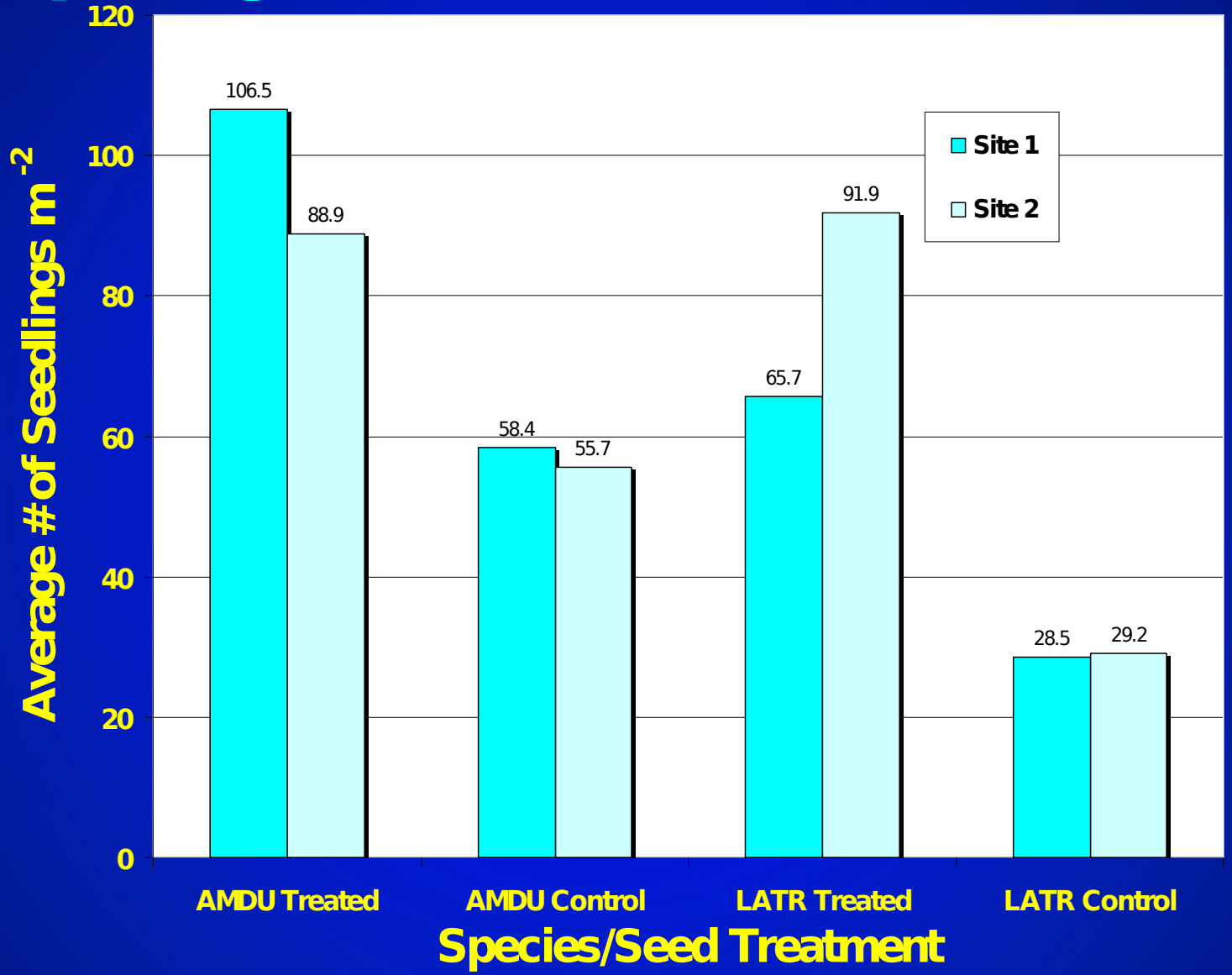
White bursage
(*Ambrosia dumosa*)
AMDU

# Spring 2001 Trials

# Spring 2001 Trials

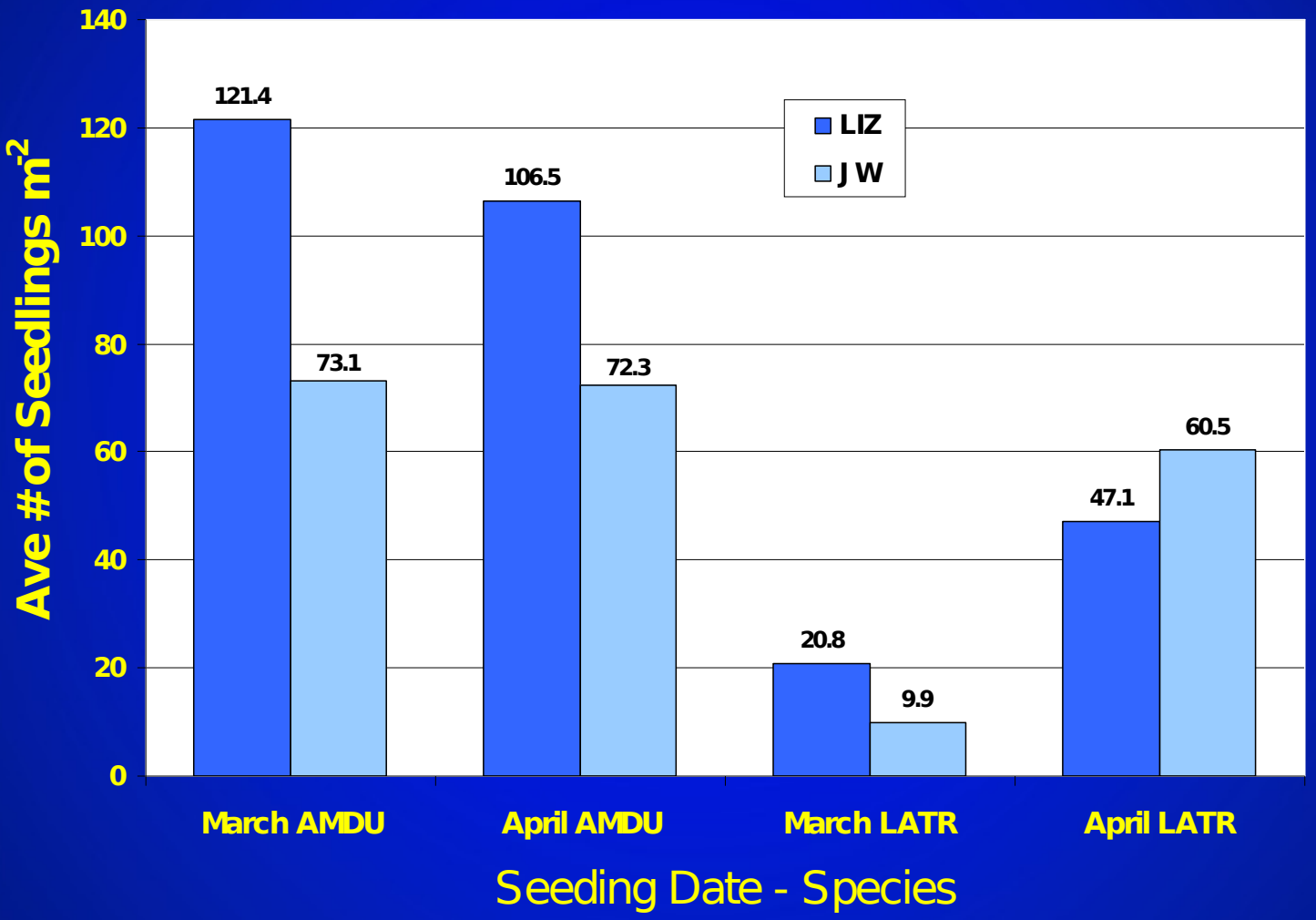
- Treated seed
- March and April seedings
- Different mulch treatments
- Minimal irrigation
- Excellent seed germination

# Spring 2001 Trials - Results



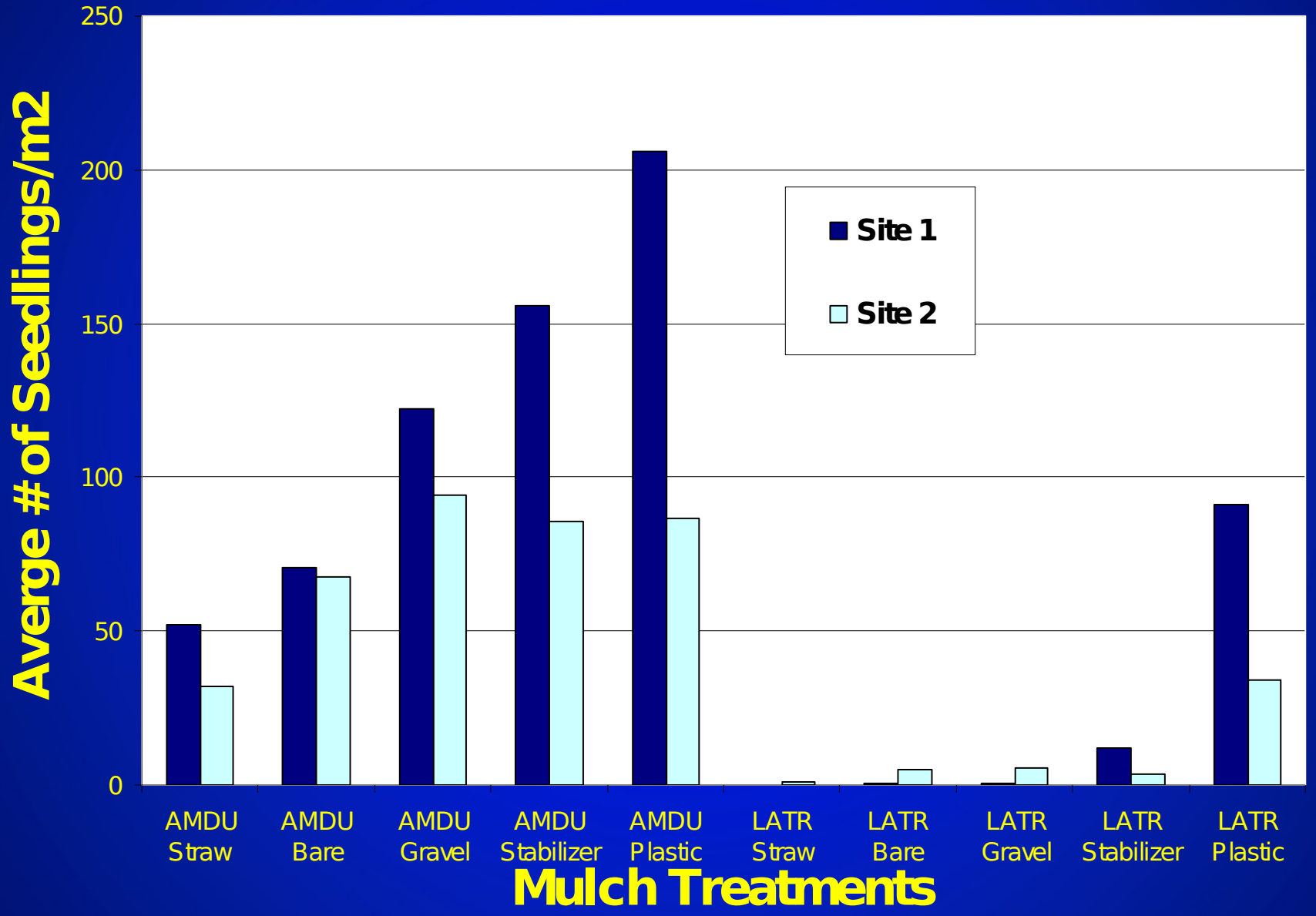
# Spring 2001 Trials - Results

## Temperature Impacts on Germination



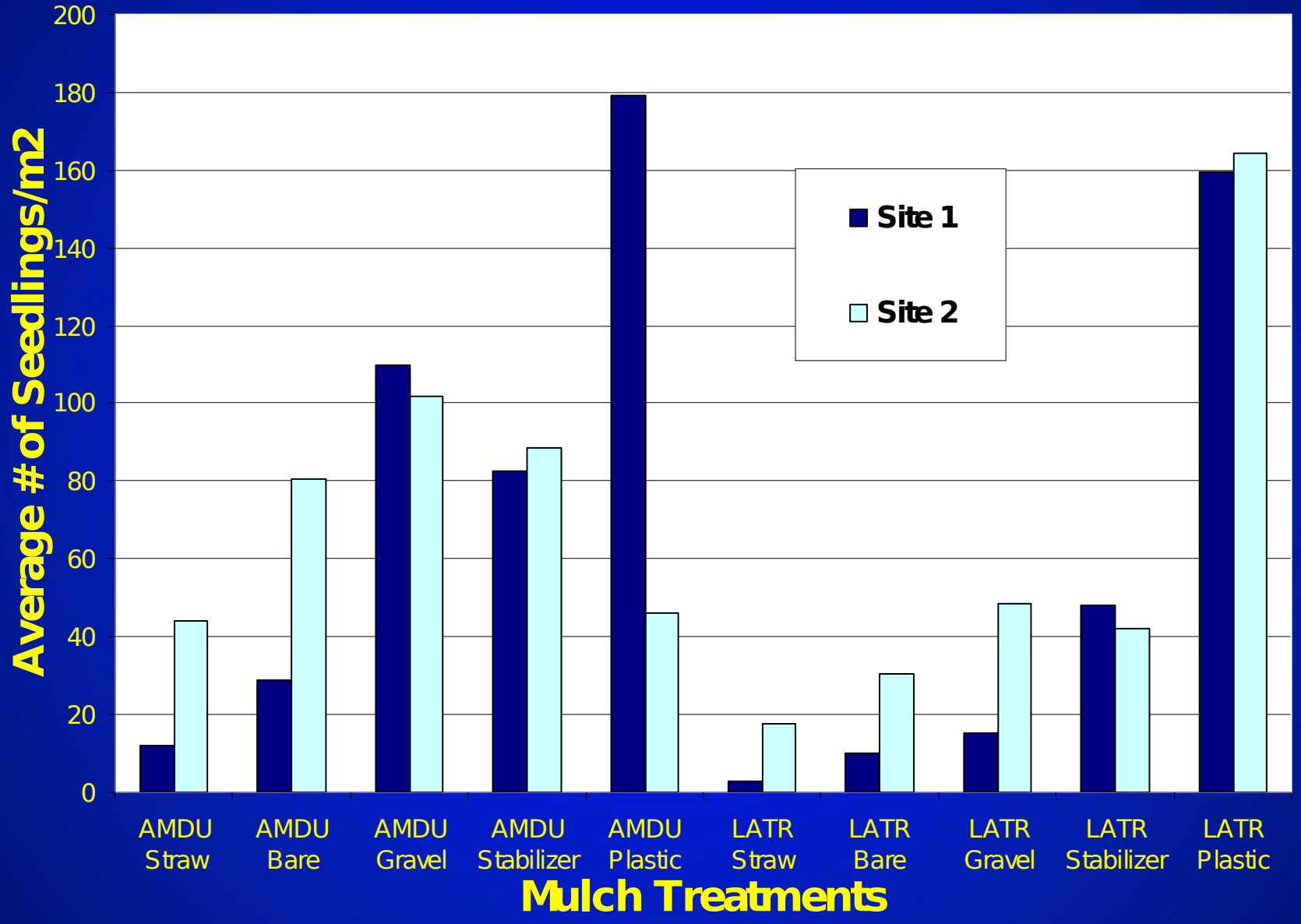
# Spring 2001 Trials - Results

## March Seeding



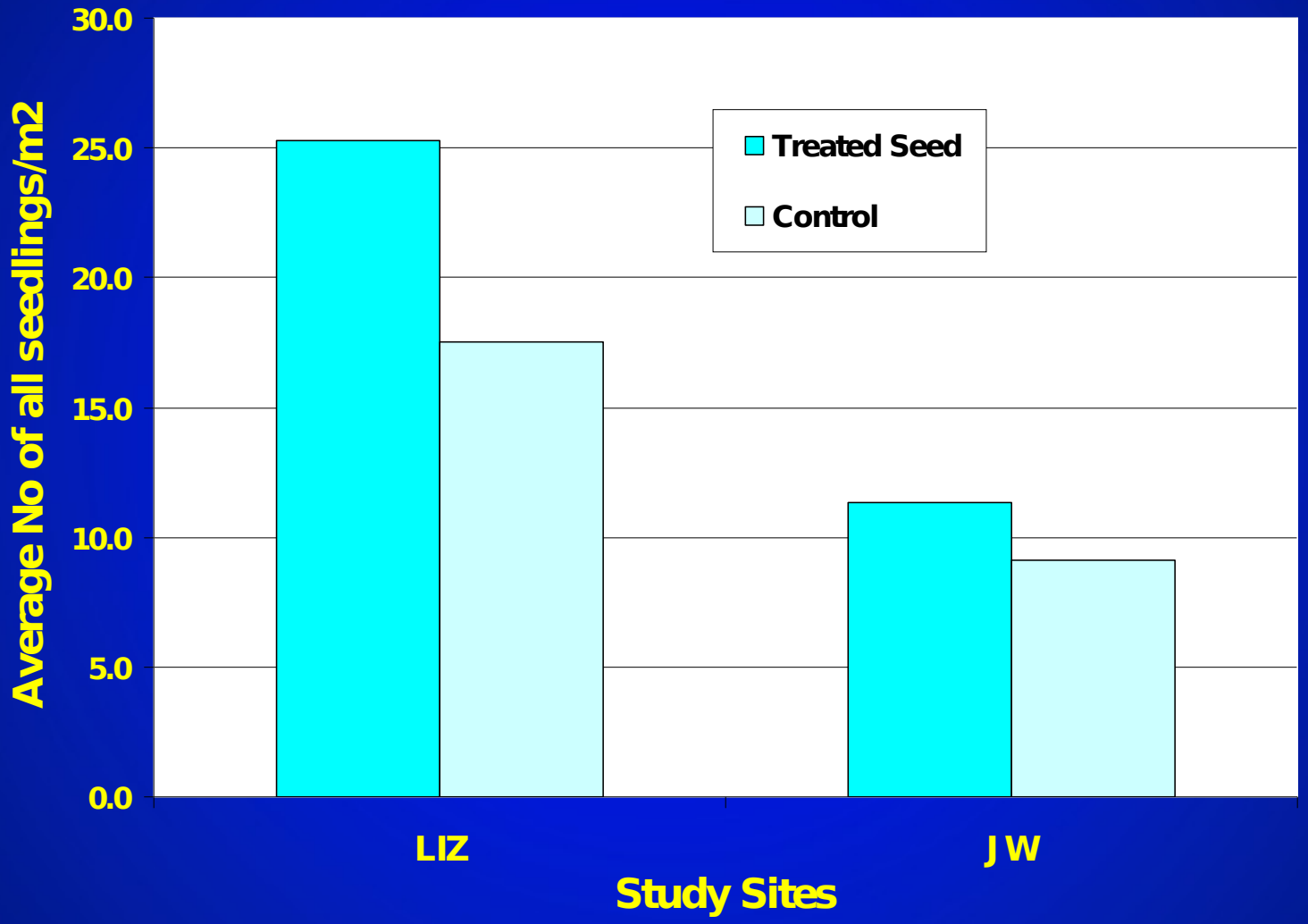
# Spring 2001 Trials - Results

## April Seeding



# Spring 2001 Trials

## Seedling Establishment after 1 Year



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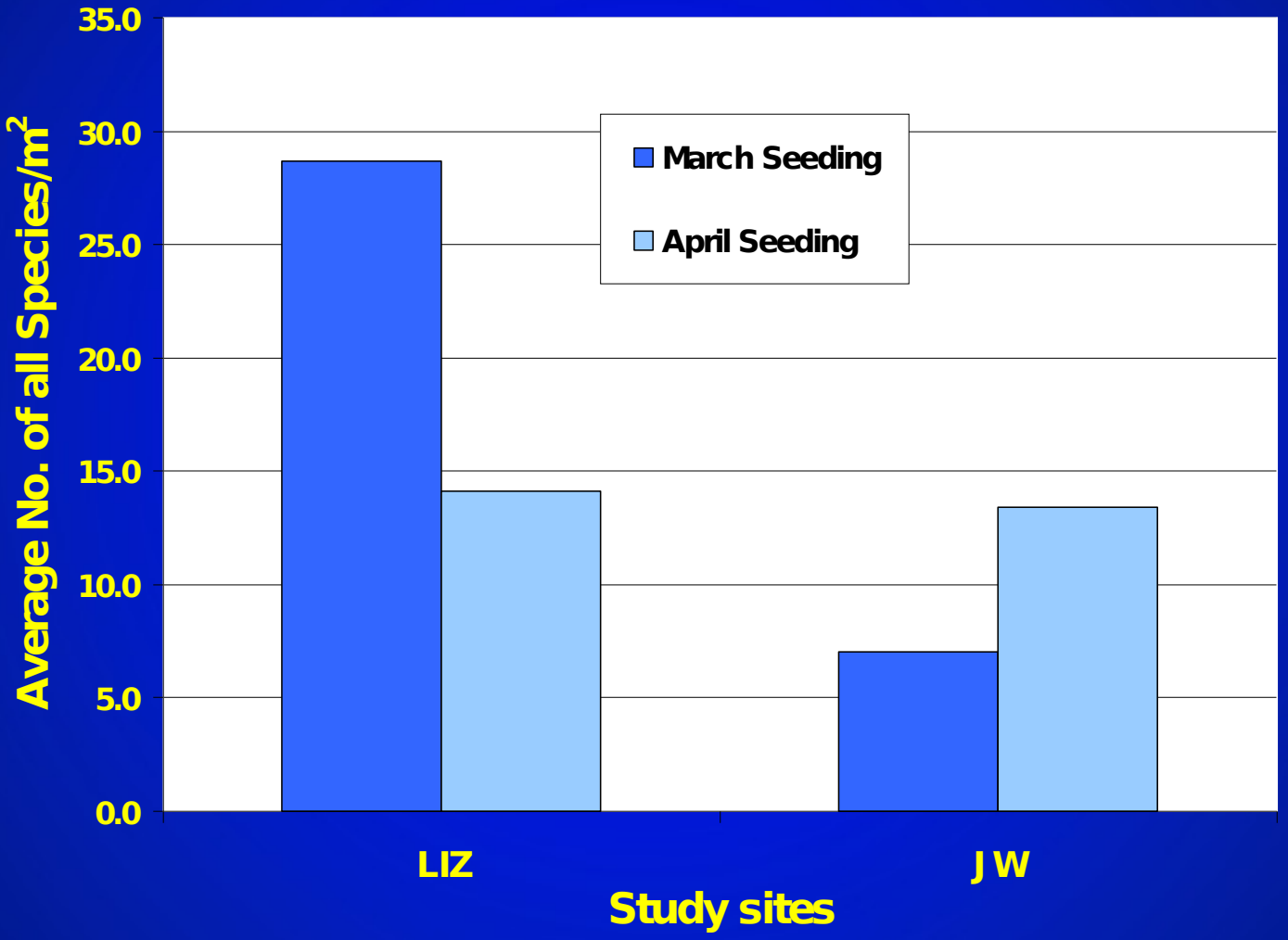

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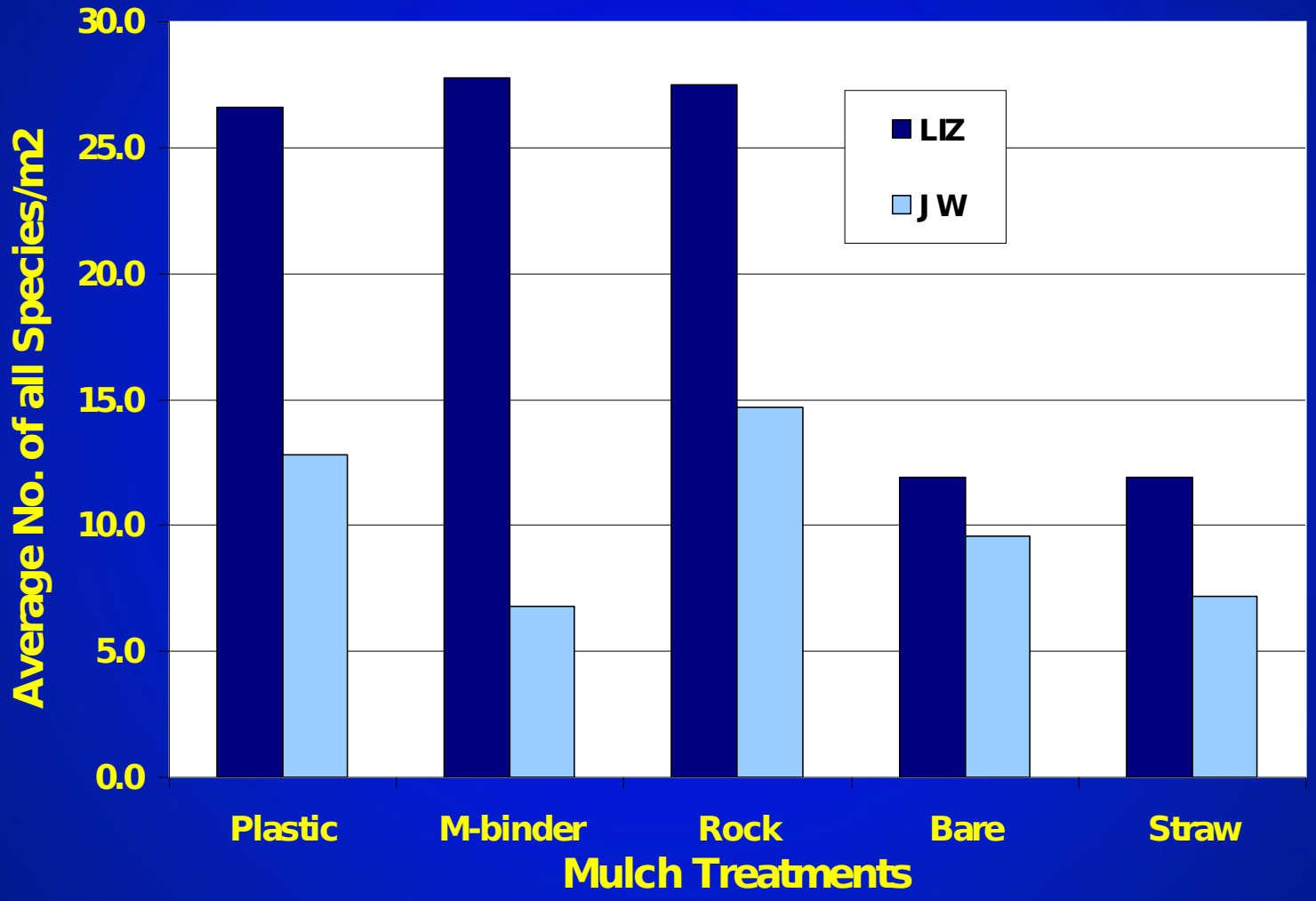
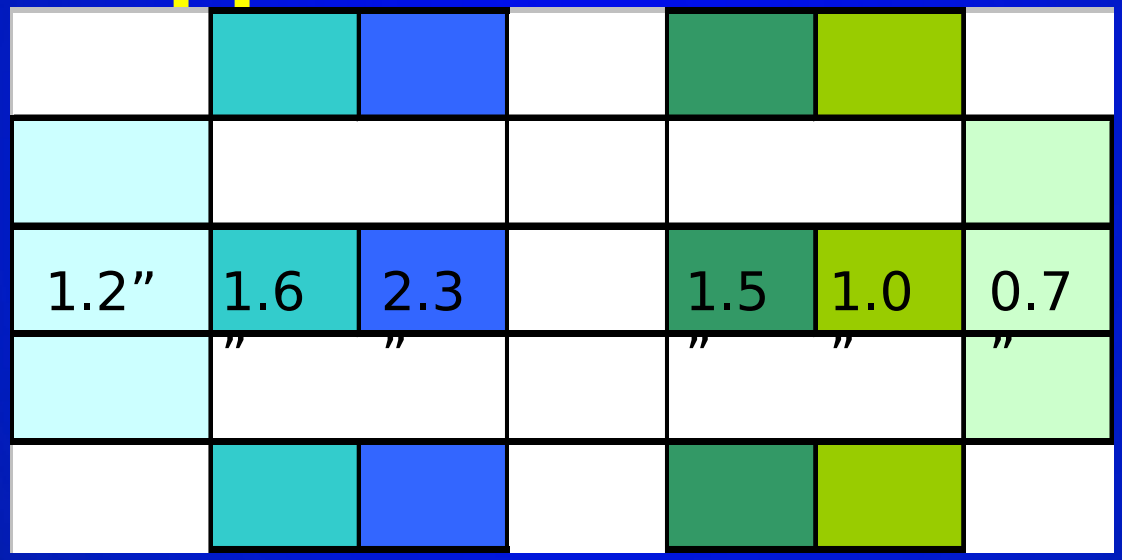


# New Trials

- September and October seedings
- Irrigation levels
- Limited mulch treatments
- Spring demonstration area

# September Trials

- **Irrigation levels**
- **Timing of application**



# September Trials

Watered

**Tilled**

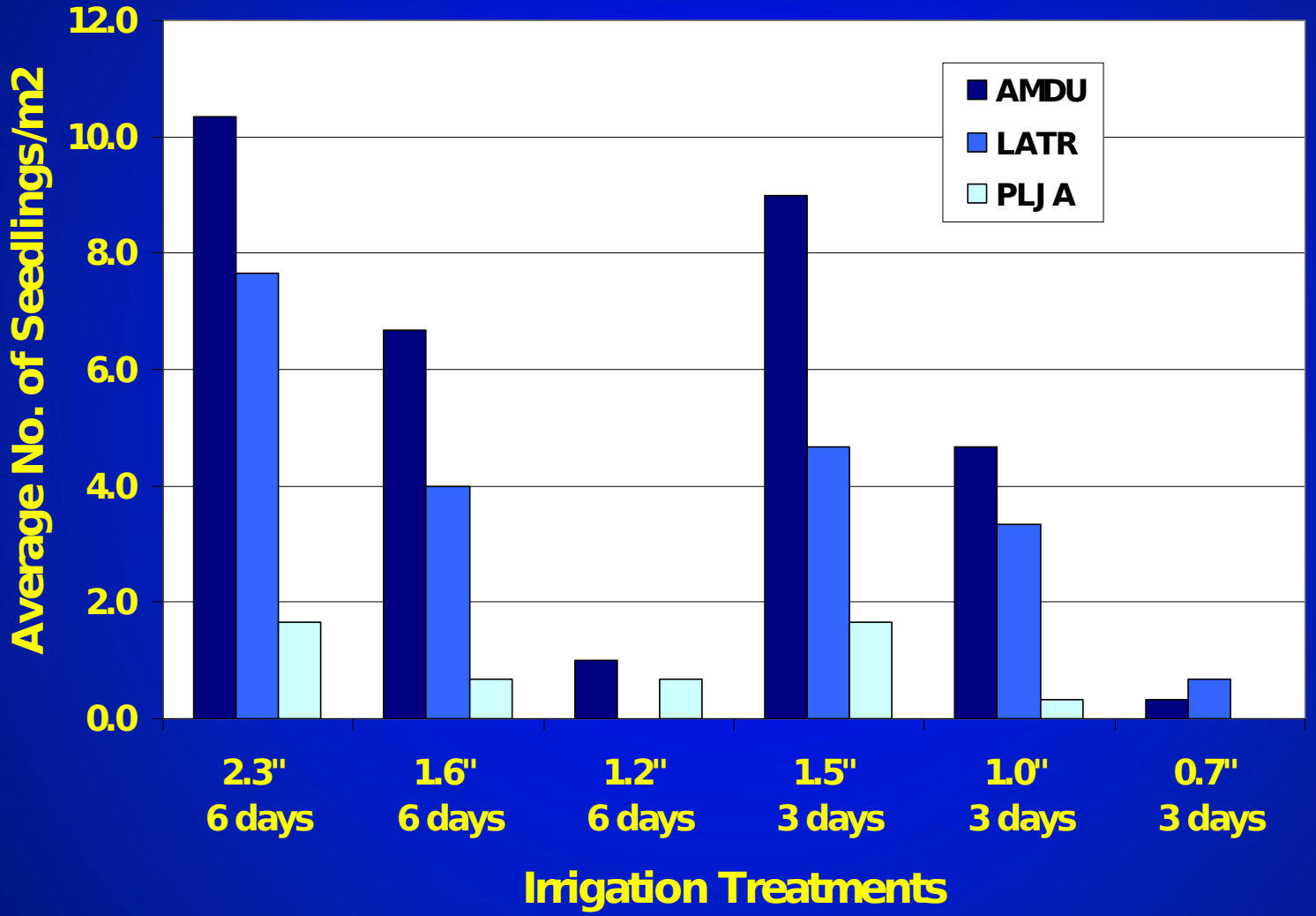
Rainout Shelters

# September Trials

## Germination

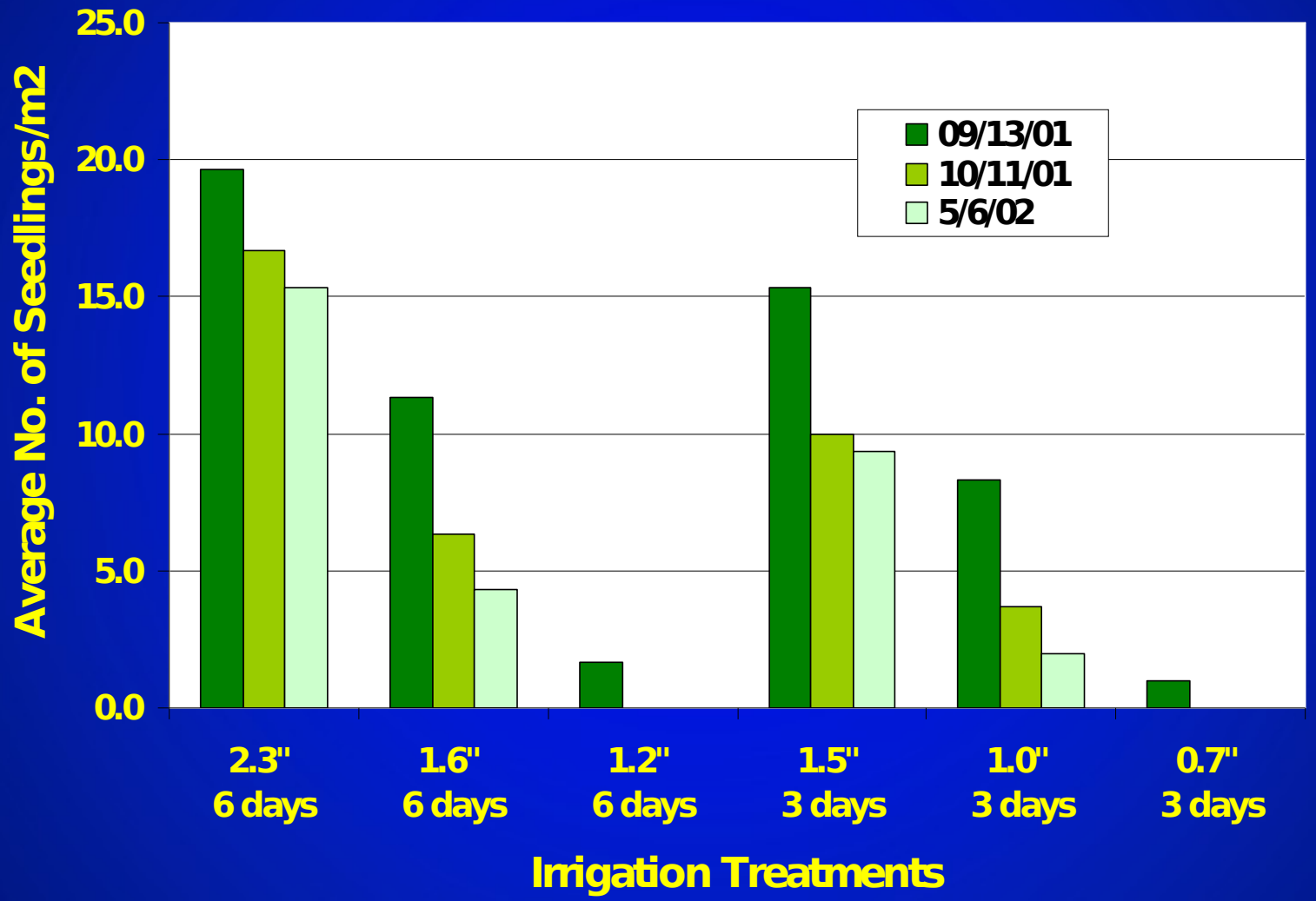
# September Trials

## Germination



# September Trials

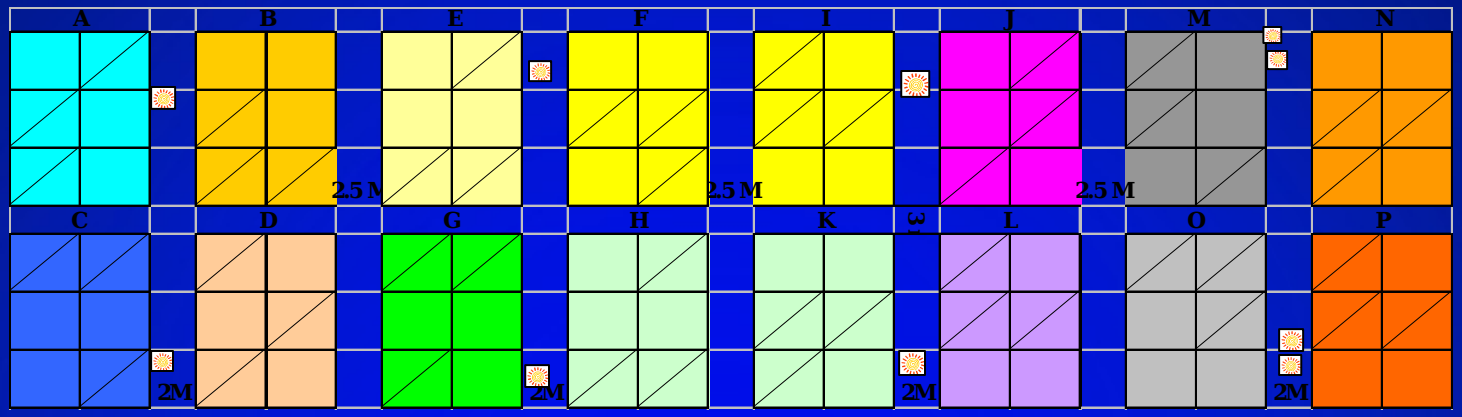
## Seedling Survival



# October Trials

- Irrigation levels (1.2-2.4”)
- Timing of application (4,6 days)
- Mulches (none, M-Binder, p t

# October Trials



# Germinated seedlings under plastic

# October Trials

No seedlings ??
What happened to seedlings under plastic??

# October Trials

## Were soil temperatures adequate?

| | Time | Control | Plastic | Watered |
|---|---|---|---|---|
| Oct. 12 | 9:45 AM | 78 | | 62 |
| | 2:00 PM | 91 | 98 | 78 |
| | 3:30 PM | 89 | 92 | 73 |
| Oct. 13 | 8:00 AM | 60 | 64 | 50 |
| | 11:20 AM | 81 | 89 | 70 |
| | 2:45 PM | 100 | 101 | 81 |
| Oct. 14 | 8:30 AM | 63 | 67 | 53 |
| | 4:30 PM | 95 | 98 | 87 |

# October Trials

Unseen Enemy

# Spring 2002 Demonstration

# Spring 2002 Demonstration

# Spring 2002 Demonstration

Washing

Drying

# Spring 2002 Demonstration

# Spring 2002 Demonstration

# Spring 2002 Demonstration

Fiber Mulch

# Spring 2002 Demonstration

# Spring 2002 Demonstration

# Spring 2002 Demonstration

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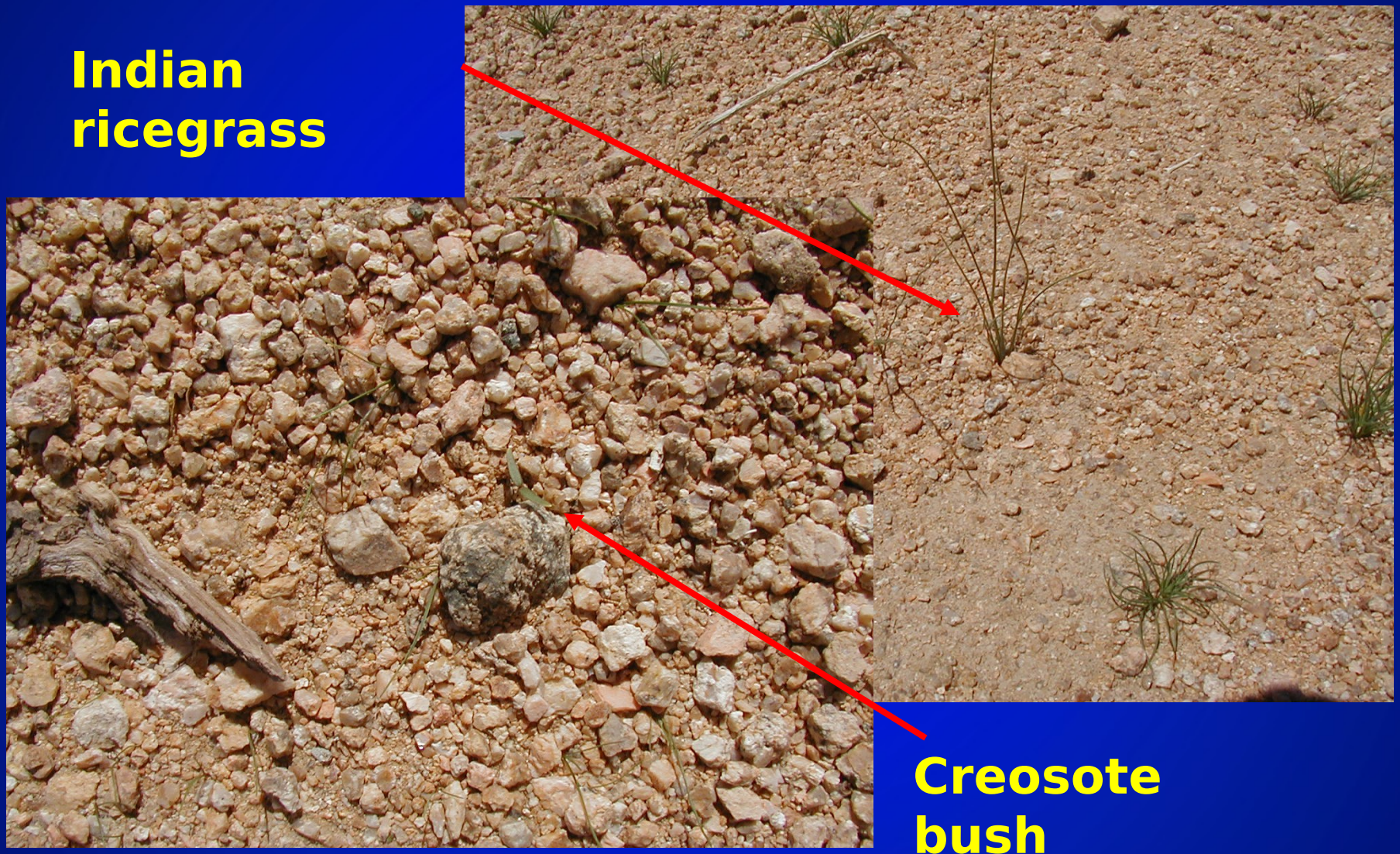
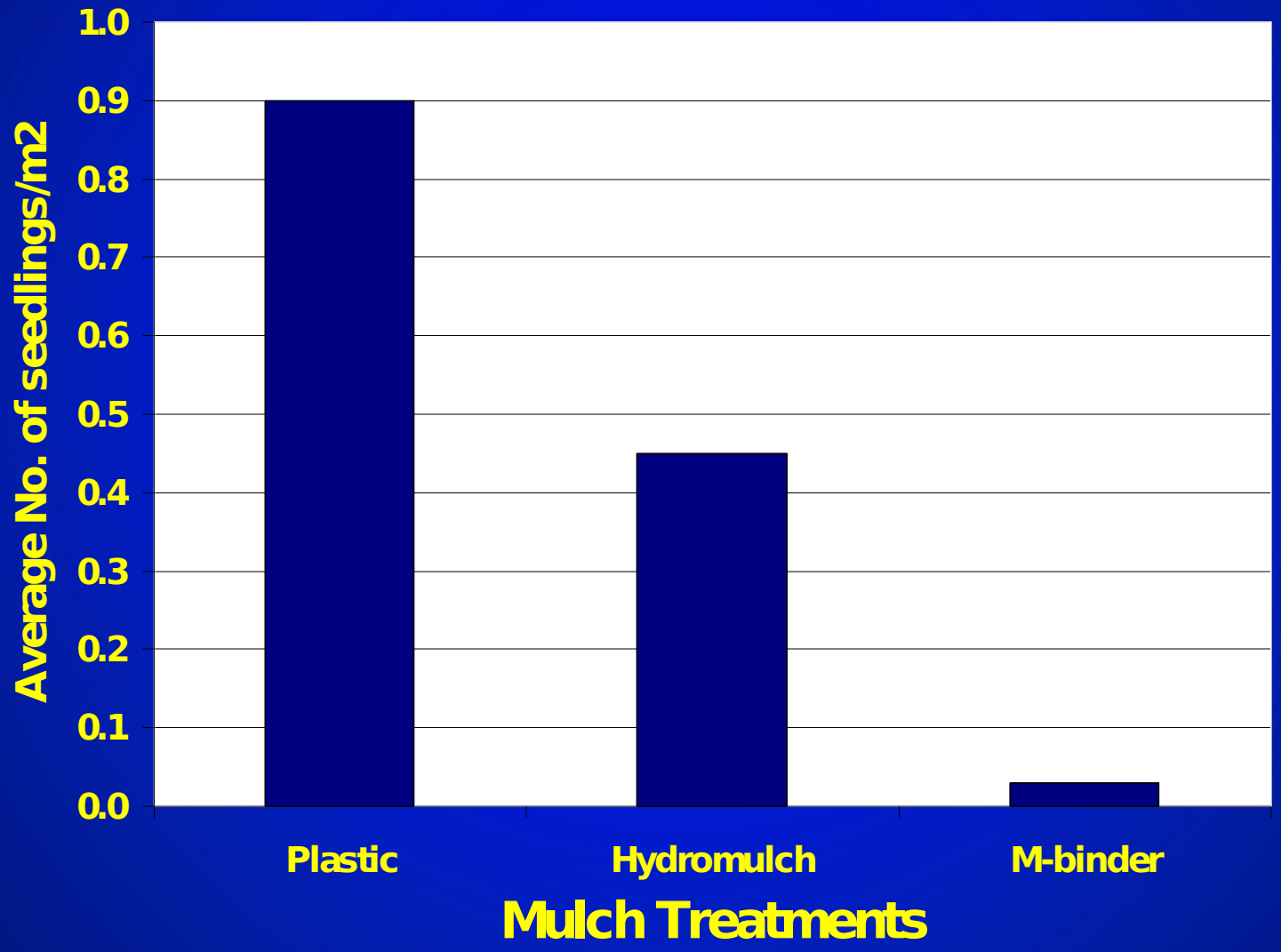


# Spring 2002 Demonstration

# Spring 2002 Demonstration

## Seedling Germination - May Sampling



# Spring 2002 Demonstration
# What Happened?

Temperature?

Rabbits?

Moisture?

Wind?

# Spring 2002 Demonstration

New Enemy

Hungry birds eat
seeds and seedlings

# Conclusions

- 2001 seedlings survived well after 1 year
- Pretreating seed increases seed germination
- Plastic, M-binder and gravel mulch are effective
- Late summer seeding can be effective
- Revegetation in arid areas is difficult
- Even with best techniques drought conditions influence success
- Wildlife can influence revegetation